Application No. 10/070,795
Amendment Dated September 14, 2005
Reply to Office Action of June 15, 2005

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-9 Cancelled.

10. (Currently amended) A method for adjusting a phase angle of a phase modifier of a transmitting device, wherein said method comprises:

providing the transmitting device comprising:

a quadrature modulator for quadrature modulation of an inphase component and a quadrature phase component of a complex input signal;

a power amplifier, connected downstream of the quadrature modulator;

a quadrature demodulator for quadrature demodulation of an output signal of the power amplifier into a fedback inphase component and a fedback quadrature phase component;

a first differential amplifier, connected upstream the quadrature modulator, said first differential amplifier having a first input supplied by the inphase component of the complex input signal and a second input supplied by the fedback inphase component;

a second differential amplifier, connected upstream the quadrature modulator, said second differential amplifier having a first input of the second differential amplifier supplied by the quadrature phase component of the complex input signal and a second input of the second differential amplifier supplied by the fedback quadrature phase component; and

a phase modifier, which supplies to the quadrature demodulator an oscillator signal, shifted with regard to an oscillator signal supplied to the quadrature modulator by the phase angle to be adjusted;

applying an input signal with a predetermined constant inphase component and a predetermined constant quadrature phase component at each transmitting interval with a closed feedback loop containing the quadrature modulator, the power amplifier, the quadrature demodulator, the first differential amplifier and the second differential amplifier;

measuring the quadrature phase component and/or the inphase component at a first measuring point behind an output of the first differential amplifier and a second measuring point behind an output of the second differential amplifier;

determining a phase correction value based on the measured quadrature phase component and/or the measured inphase component; and

correcting the currently set phase angle of the phase modifier by adding or subtracting the determined phase correction value in a transmitting interruption interval, wherein the phase angle is not altered if the amount of the measured quadrature phase component is smaller than a predetermined limit value.

11. (Currently amended) The method according to claim 10, wherein the quadrature phase component of the complex input signal being applied has a value of zero, and the measuring at the second measuring point behind the output of the second differential amplifier takes place at a beginning of every transmitting interval.

12. (Currently amended) The method according to claim ~~11~~16, wherein the inphase component is measured at the first measuring point behind the output of the first differential amplifier.

13. (Previously presented) The method according to claim 10, wherein the phase correction value ($\Delta\varphi$) is determined by solving the following equation:

$$\Delta\varphi = \arctan (V_{QM}/V_{IM}) - \arctan (Q/I)$$

wherein V_{QM} is the measured quadrature phase component, V_{IM} is the measured inphase component, Q is the predetermined quadrature phase component and I is the predetermined inphase component.

14. (Currently amended) The method according to claim ~~11~~16, wherein the phase correction value ($\Delta\varphi$) is determined by solving the following equation:

$$\Delta\varphi = \arctan (V_{QM}/V_{IM}) - \arctan (Q/I)$$

wherein V_{QM} is the measured quadrature phase component, V_{IM} is the measured inphase component, Q is the predetermined quadrature phase component and I is the predetermined inphase component.

15. (Previously presented) The method according to claim 12, wherein the phase correction value ($\Delta\varphi$) is determined by solving the following equation:

$$\Delta\varphi = \arctan (V_{QM}/V_{IM}) - \arctan (Q/I)$$

wherein V_{QM} is the measured quadrature phase component, V_{IM} is the measured inphase component, Q is the predetermined quadrature phase component and I is the predetermined inphase component.

16. (Currently amended) ~~The method according to claim 11,~~ A method for adjusting a phase angle of a phase modifier of a transmitting device, wherein said method comprises:

providing the transmitting device comprising:

a quadrature modulator for quadrature modulation of an inphase component and a quadrature phase component of a complex input signal;

a power amplifier, connected downstream of the quadrature modulator;

a quadrature demodulator for quadrature demodulation of an output signal of the power amplifier into a fedback inphase component and a fedback quadrature phase component;

a first differential amplifier, connected upstream the quadrature modulator, said first differential amplifier having a first input supplied by the inphase component of the complex input signal and a second input supplied by the fedback inphase component;

a second differential amplifier, connected upstream the quadrature modulator, said second differential amplifier having a first input of the second differential amplifier supplied by the quadrature phase component of the complex input signal and a second input of the second differential amplifier supplied by the fedback quadrature phase component; and

a phase modifier, which supplies to the quadrature demodulator an oscillator signal, shifted with regard to an oscillator signal supplied to the quadrature modulator by the phase angle to be adjusted;

applying an input signal with a predetermined constant inphase component and a predetermined constant quadrature phase component at each transmitting interval with a closed feedback loop containing the quadrature modulator, the power amplifier, the quadrature demodulator, the first differential amplifier and the second differential amplifier;

measuring the quadrature phase component and/or the inphase component at a first measuring point behind an output of the first differential amplifier and a second measuring point behind an output of the second differential amplifier;

determining a phase correction value based on the measured quadrature phase component and/or the measured inphase component; and

correcting the currently set phase angle of the phase modifier by adding or subtracting the determined phase correction value in a transmitting interruption interval,

wherein the quadrature phase component of the complex input signal being applied has a value of zero, the measuring at the second measuring point behind the output of the second differential amplifier takes place at a beginning of every transmitting interval and the determining of the phase correction value comprises altering the phase angle by a step width in a first direction if the measured quadrature phase component is positive and altering the phase angle by a step width in an opposite direction if the measured quadrature phase component is negative.

17. (Previously presented) The method according to claim 16, wherein the step width depends on an amount of the measured quadrature component.

18. (Currently amended) The method according to claim ~~12~~10, wherein the determining of the phase correction value comprises altering the phase angle by a step width in a first direction if the measured quadrature phase component is positive and altering the phase angle by a step width in an opposite direction if the measured quadrature phase component is negative.

19. (Previously presented) The method according to claim 18, wherein the step width depends on an amount of the measured quadrature component.

20. (Cancelled)

21. (Currently amended) The method according to claim ~~11~~16, wherein the phase angle is not altered if the amount of the measured quadrature phase component is smaller than a predetermined limit value.

22. (Currently amended) The method according to claim ~~12~~29, wherein the phase angle is not altered if the amount of the measured quadrature phase component is smaller than a predetermined limit value.

23. (Currently amended) The method according to claim ~~13~~24, wherein the phase angle is not altered if the amount of the measured quadrature phase component is smaller than a predetermined limit value.

24. (Currently amended) ~~The method according to claim 10,~~ A method for adjusting a phase angle of a phase modifier of a transmitting device, wherein said method comprises:

providing the transmitting device comprising:

a quadrature modulator for quadrature modulation of an inphase component and a quadrature phase component of a complex input signal;

a power amplifier, connected downstream of the quadrature modulator;

a quadrature demodulator for quadrature demodulation of an output signal of the power amplifier into a fedback inphase component and a fedback quadrature phase component;

a first differential amplifier, connected upstream the quadrature modulator, said first differential amplifier having a first input supplied by the inphase component of the complex

input signal and a second input supplied by the fedback inphase component;

a second differential amplifier, connected upstream the quadrature modulator, said second differential amplifier having a first input of the second differential amplifier supplied by the quadrature phase component of the complex input signal and a second input of the second differential amplifier supplied by the fedback quadrature phase component; and

a phase modifier, which supplies to the quadrature demodulator an oscillator signal, shifted with regard to an oscillator signal supplied to the quadrature modulator by the phase angle to be adjusted;

applying an input signal with a predetermined constant inphase component and a predetermined constant quadrature phase component at each transmitting interval with a closed feedback loop containing the quadrature modulator, the power amplifier, the quadrature demodulator, the first differential amplifier and the second differential amplifier;

measuring the quadrature phase component and/or the inphase component at a first measuring point behind an output of the first differential amplifier and a second measuring point behind an output of the second differential amplifier;

determining a phase correction value based on the measured quadrature phase component and/or the measured inphase component; and

correcting the currently set phase angle of the phase modifier by adding or subtracting the determined phase correction value in a transmitting interruption interval,

wherein prior to or concurrent with activating the transmitting device, the phase angle of the phase modifier is preliminarily adjusted such that an output power is measured at a power detector connected downstream of the power amplifier and the phase angle is pre-adjusted such that a minimum of the output power results.

25. (Previously presented) The method according to claim 24, wherein the signal of the feedback loop is damped during measurement of the output power.

26. (Currently amended) The method according to claim ~~11~~16, wherein prior to or concurrent with activating the transmitting device, the phase angle of the phase modifier is preliminarily adjusted such that an output power is measured at a power detector connected downstream of the power amplifier and the phase angle is pre-adjusted such that a minimum of the output power results.

27. (Currently amended) The method according to claim ~~12~~10, wherein prior to or concurrent with activating the transmitting device, the phase angle of the phase modifier is preliminarily adjusted such that an output power is measured at a power detector connected downstream of the power amplifier and the phase angle is pre-adjusted such that a minimum of the output power results.

28. (Previously presented) The method according to claim 13, wherein prior to or concurrent with activating the transmitting device, the phase angle of the phase modifier is preliminarily adjusted such that an output power is measured at a power detector connected downstream of the power amplifier and the phase angle is pre-adjusted such that a minimum of the output power results.

29. (New) The method according to Claim 24, wherein the inphase component is measured at the first measuring point behind the output of the first differential amplifier.

30. (New) The method according to Claim 24, wherein the determining of the phase correction value comprises altering the phrase angle by a step width in a first direction if the measured quadrature phase component is positive and altering the phase angle by a step width in an opposite direction if the measured quadrature phase component is negative.